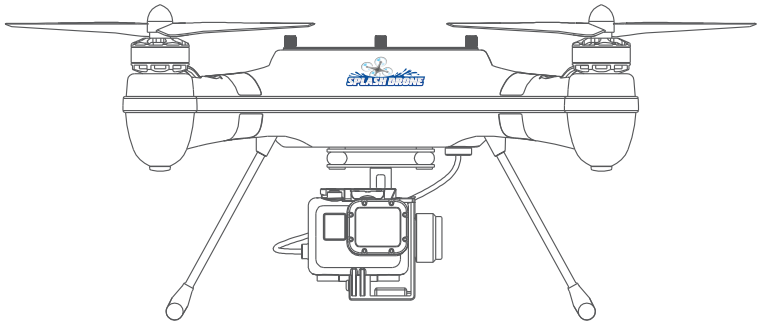
SPLASH DRONE PRO VERSION
User Manual V2.0

2015.07



SwellPRO®

www.swellpro.com

SPLASH DRONE PRO User Manual

V2.0 2015.07

Preface

Thanks for purchasing your new SwellPRO product. Please thoroughly read the entire contents of this manual to fully use and understand the product.

It is advised to check the Splash Drone's product page at www.swellpro.com which is updated on a regular basis. This will provide services such as product information, technical updates and manual corrections.

Due to any unforeseen changes or product upgrades, the information contained within this manual is subject to change without notice. If you have any questions or concerns regarding your product, please contact your dealer or SwellPRO Customer Service.

Warning & Disclaimer of Liability

This product is NOT SUITABLE FOR PEOPLE UNDER THE AGE OF 18

Obligatorily, please read the user Manual carefully before flight. For sake of safety, please DO comply with regulations of ICAO, Local space territory Legacy and UAV Management Discipline to enjoy flights with Splash Drone in the open air & keep away from residences. Uninstalling Propellers is strongly advised during radio calibrations & parameters setting.

SwellPRO is exempt liabilities from damage(s) & injuries incurred directly / indirectly from the use of this product in the following conditions:

1.Damage(s) or Injuries incurred when users are under the influence of alcohol, drugs or impaired in any way through sickness, both physically and mentally;

2.Damage(s) or injuries caused by subjective intentional operations as well as any mental damage compensation caused by accident;

3.Any malfunction caused by human failure to follow the guidance of the manual to assemble or operate;

4.Damage(s) or injuries occurred in mechanical and electronic parts by a green hand operator without training;

5.Damage(s) or injuries caused by forgetting/failing to calibrate aircraft before flight;

6.Damage(s) or injuries incurred from using the unauthorized third party accessories or counterfeit parts against SwellPRO's relative policy;

7.Damage(s) or injuries caused by operation faults, bad judgments and modifications imposed on Splash Drone;

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8.Damage(s) or injuries caused by using malfunction & aging parts;
9.Damage(s) or injuries occurred by persistent flight after the low-battery warning;
10.Damage(s) or injuries occurred by salty corrosion without (thoroughly) washing & drying the parts that engaged in sea water;
11. Damage(s) or injuries caused by losing control on aircraft due to change the location of flight controller;
12. Damage(s) or injuries caused by using other third party appliances, such as Transmitter/Receiver/Remote control device;
13. Damage(s) or injuries occurred in circumstances with possible interference, including the magnetic filed, radio signal and other subjective operation troubles caused by bad judgments, obscure vision & poor-eyesight;
14. Damage(s) or injuries occurred when the aircraft is in the following situations: collision, fire, explosion, floods, tsunamis, ice, snow, avalanche, flooding, landslide, earthquake, etc. ;
15. Damage(s) or injuries caused by abusing & modifying the protective circuit inside of Battery;
16. Any legal liability incurred by illegal activities. Please use products within limits permitted by local laws and regulations;
SwellPRO reserves all the rights for final interpretation. Forbidden (Important)

Symbols Highlighting

⃠ Forbidden (Important) ⚠ Caution (Important)

Fundamental Awareness

⚠ Please QUIT using the aircraft if any exceptional abnormality occurs.
⚠ Please DO make sure the Throttle joystick is staying at neutral position before switching on radio controller. Damage(s) or injuries may occur in tuning Splash Drone, so please DO ensure all engines are turned off before any calibrations.

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1、Product Introduction

Splash Drone is the world's 1st amphibious & waterproof Quad-copter. Basing on a global lifestyle brand SwellPRO, Splash Drone is born to be the user-friendly, Civil-consumable and Intelligent communicative aircraft that people can enjoy passionate about capturing and sharing images & videos with the waterproof 2-Axis Gimbal during Rainy weather/ surfing/ sea sporting, ect.

Especially, Splash Drone equips with the waterproof Pay-load release mechanism, brings great convenience to aerial photography delivery life-saving necessities in an emergency & treacherous circumstance, such as swim ring, air jacket, radio, emergency flare kit, even a bottle of water.

2、Function Abstract

Splash Drone Versatility Introduction
1. Pay-load release: loading an object weighing 1.0KG for specified delivery & drop-off.
2. Waterproof Gimbal: Integrated with Gopro-suited Dive Box, your Gopro camera can feed live high resolution videos even in the water/ sea/ rain.
3. Emergency Flare kit: Hovering up to 20mins at height of 300m for emergency signal.
4. 5.8G Video transmitter: Transmit back clear videos within the range up to 2KM.
5. Auto Return-To-Home: Taking into effection when losing radio signal under GPS mode, the flight control system will execute intelligent detect and automatically remote control your Splash Drone to return back to take-off location.
6. Dual OSD transmission: Presenting at-sight flight parameters visible on radio controller, such as latitude, distance, height, satellite signal, speed, battery balance, ect.
7. Slef-tightening Propeller: Easier assembly without fixing by the spinners & screws.
8. Smart Changer: All-In-One balance changer with no more complicated settings, support 2S~4S Lipo Battery.
9. Follow me mode (Optional): Automatically following up the specified moving object to execute a whole process aerial photography
10. App control (Optional): Control your Splash Drone by App program via Android phone/ tablet device.
11. Waypoint & Mission Planning flight (Optional): Allow pilot to drop waypoints and execute specific flight path.
12. Aluminum-alloy suitcase: Enclosing all the accessories of Splash Drone in a safe & packing/ transportation friendly method, especially the inner design of foam storage cabinets makes every parts well-organized.

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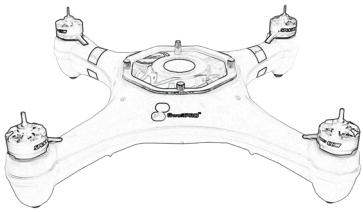
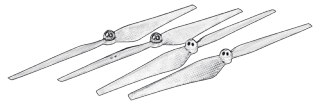
3、What’s in the Box?

Attention: Please check & confirm every parts enclosed with your specific version of Splash Drone accordingly as follow:

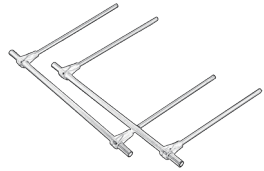


Splash Dronex1 set

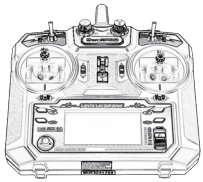


Self-tightening Propeller x2 pairs

Lipo Battery x1pc



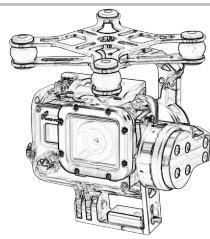
Quick-release Landing gear x1 set



2.4G Radio controller x1 set

Short terminal of Receiver x1pc

Mini 5.8G video transmitter x1pc



Waterproof 2-Axis Gimbal x1 set

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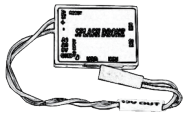
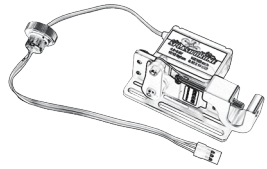


Gimbal controller Board x1 set

M3 Screws x5pcs

Quick-release mounting plate for Dive Case



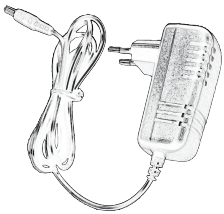
Waterproof Pay-load releaser x1 set

7 Inch diversity LCD FPV Monitor x1 set

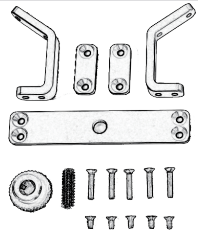
Receiver Antenna of FPV Monitor x1 set

AV Out cable of FPV Monitor x1 set

Charger cable of FPV Monitor x1 set



Smart Chanrger of FPV Monitor x1



Mounting bracket of FPV Monitor x1 set

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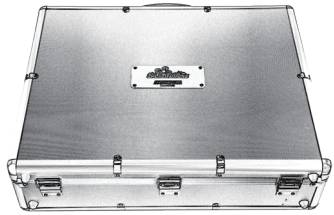
Smart Chanrger x1 set

Charger cable in EU Specification x1 set

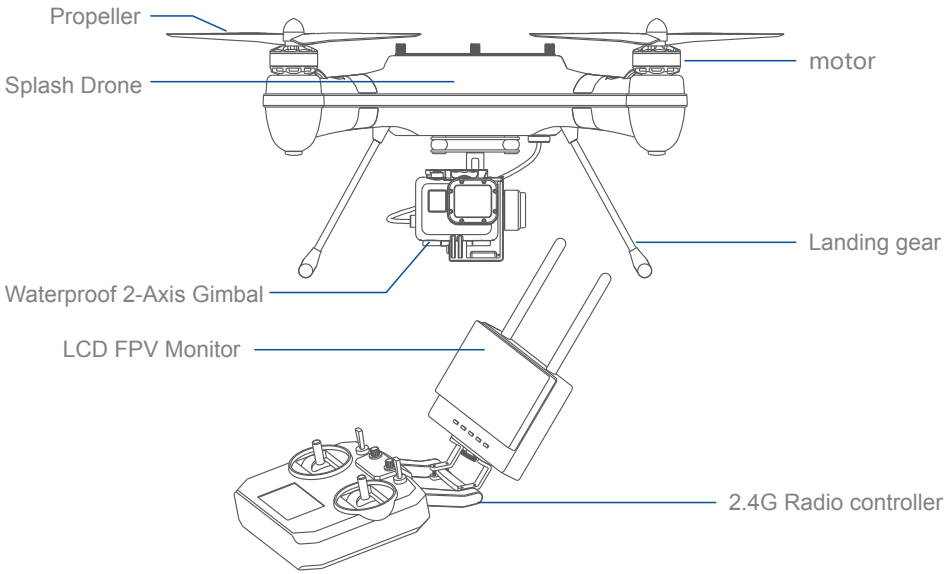
Charger cable in U.S. Specification x1 set



Aluminum-alloy Suitcase x1 set

4、Splash Drone PRO version

Splash Drone PRO version is composition of main aircraft, waterproof Gimbal and FPV monitoring system. Including the built-in flight controller, 2.4G telemetry remoter, compatible 2-Axis gimbal for Gopro hero 3/4 series, 5.G Video transmitter and 7 Inch LCD Monitor to feed the live video with excellent FPV experience.



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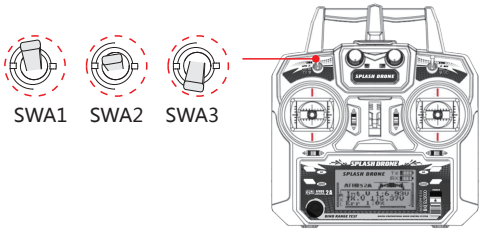
Attention:

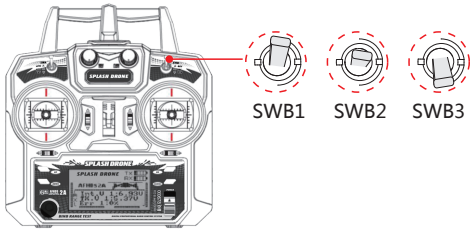
In case of losing control, please DO keep Splash Drone visible in your eye sight. Radio controller is defaulted as Left throttle, customized setting for Right throttle is available based on request.

Radio controller

4.1 、Flight Mode

Flipping switch A (SWA) is integrated with 3 gears: SWA1, SWA2, SWA3.		
	SWA1	GPS Mode
	SWA2	ATTI Mode
	SWA3	FIXED SPEED Mode

4.2 、IOC Mode

Flipping switch B (SWB) is integrated with 3 gears: SWB1, SWB2, SWB3.		
	SWB1	Normal
	SWB2	IOC Mode
	SWB3	Return-To-Home

4.3 、Gimbal controller

VRA, VRB is knob switch to adjust the best photography location & angle through brushless Gimbal. (Initial VRA for Roll control is in horizontal location, and VRB for pitch control is as defaulted.)

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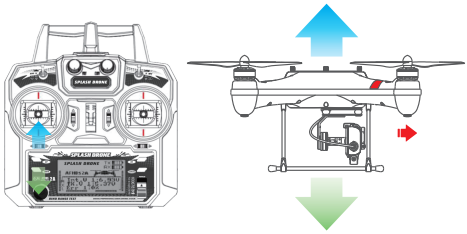
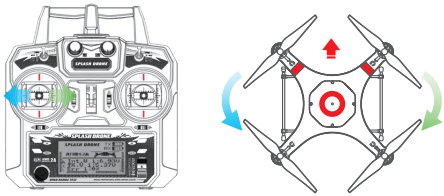
4.4、Flight

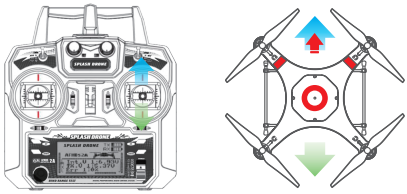
Throttle joystick is for elevating upward/ downward

Throttle joystick (from Down to Up) controls the flying height	
	Push up Throttle joystick to accelerate elevating Pull down Throttle joystick to bring down the drone
	Under GPS mode, hovering is available when throttle joystick stays at neutral position.
	Taking-off by slightly pushing throttle joystick excess the neutral position. ⚠ Attention: Slight operations on throttle joystick is always suggestible during flight.

Throttle joystick (from Left to Right) controls the Yaw direction	
	Pull joystick to Right to execute clockwise flight.
	Pull joystick to Left for counter-clockwise flight.
	Aircraft keeps its current location when joystick stays in the neutral position. Larger variances imposed, the higher rotating speed would be performed.

4.5、Controls forward & backward

Aileron joystick is for horizontal direction during flight, such as forward/ backward/ left/ right.

Aileron joystick (from Up to Down) controls forward & backward in the horizontal plane	
	Push up joystick to fly forward. Pull down joystick to fly backward.
	Aircraft flies in a specific horizontal plane when joystick stays in the neutral position. Larger variances imposed at up/down motion, larger tilting angle as well as higher speed would be performed.

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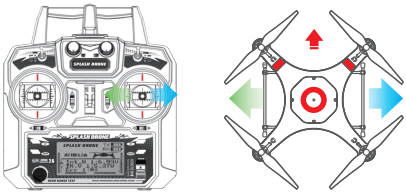
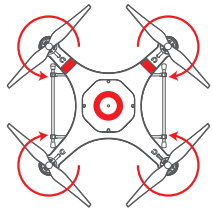
Aileron joystick (from Left to Right) controls left & right flight in the horizontal plane	
	Aircraft flies to right when pulling joystick to Right Aircraft flies to left when pulling joystick to left
	Aircraft flies in a specific horizontal plane when joystick stays in the neutral position. Larger variances imposed on left/right motion, the larger tilting angle as well as higher speed would be performed.

4.6、Self-tightening Propeller

Properly mounting & fastening the propeller before flight.

Take out 4pcs original 12-Inch self-tightening carbon fiber propellers, 2pcs with sliver nut & 2pcs with black nut. Locate the Splash Drone on the flat & even benchmark, then assemble Props of Sliver nut to the motor with silk-printing 'CW', Props of Black nut to the motor with silk-printing 'CCW'.

The Props of Splash Drone is self-tightening type without extra fix by spinner & screws. Please note the rotating direction of Motor is opposite to tighten Props. Make sure to comply with below proportionality to match the right Props to the right motors firmly.

Propeller	Prop with Sliver nut(1243R)	Prop with Black nut(1243L)
Physical photo		
Assembly Location	Motor with silkprinting 'CCW'	Motor with silkprinting 'CW'
Propeller Assembly Indication		

Uninstall Propeller

NEVER try to uninstall Props without stopping the Motors and powering off the aircraft!!!

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Notice :
Props are self-tighten design without extra spinner & screw glue to fix.
Make sure the percentile firm assembly between the right Props and motors.
Please check to ensure every Props are in good shape before every flight. Aging & destroyed Props are FORBIDDEN to use on Splash Drone firmly.
DON'T touch the rotating Props & running motors.
Pls ALWAYS use the original 12Inch Props according to proper assembly instruction.

4.7 Battery

Usage & Cautions

- Forbid putting the battery into water, fire or heat place; please keep the battery away from source of water and fire;
- Battery should store in a cool and dry environment.
- Battery temperature is high temporarily after use. Don't start charging until the battery cools down to room temperature;
- Do not leave the battery charged unattended. If abnormal charging situation occurs, please stop charging the battery at once; if you cannot attend the battery, remove the battery from the charger in case of unpredictable danger;
- Forbid imposing external force on the battery; do not drop the battery from high places and disassemble or modify the battery;
- Please replace the battery with new one if it bulges;
- If a child accidentally swallows the battery you should immediately seek medical assistance.
- Battery should be charged with proper standard charger.
- Forbid connecting the battery reversed in positive and negative terminals in the charger or equipment.
- Forbid letting the battery terminals (+and-) touch together to cause short-circuit.
- Forbid transport or store the battery together with metal objects.
- Forbid driving a nail in, hit with a hammer, or stomp on the battery.
- Do not disassemble or alter the battery.
- Do not use the battery in strong electrostatic areas; otherwise the electronic protection may be damaged which may cause a hazard.
- If you get the battery electrolyte leakage into your eyes, don't rub, first wash your eyes with clean water then seek medical assistance immediately. If not handled in a timely manner, eyes could be damaged.
- Do not use the battery when it emits an odor, high temperature, deformation, change in color or other abnormal phenomena; if the battery is in use or charging, you should stop charging or using immediately.

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⚠ If the battery terminal gets dirty, please clean it with a dry cloth before using. Otherwise it will cause a poor contact, thus causing energy loss or inability to charge.

⚠ Discarded battery could lead to a fire; you should completely discharge the battery and wrap the output terminal with insulating tape before discarding.

⚠ DO NOT drain the battery of Splash Drone or leave the battery plugged into the Splash Drone when unused. When there is low voltage alert please landing timely to avoid damages to the battery or others.

⚠ Unplug the battery if not occupying with aircraft.

Charging Battery

Charging Process
1. Insert the AC power cord into charger (Image I)
2. Insert the AC power cord into 100-240V AC socket, all LED will light for 1 second, then your charger is ready for using (Caution: Always power ON the charger before connecting a battery, or damage to the hanger and the battery can result)
3. Connecting the battery pack to the charger with the XH balance plug (Image I) (Caution: Before charging, ensure you have chosen the correct battery chemistry type for the battery charging)
4. The charger starts charging. The four LED will indicate the battery capacity: 1 LED light means battery capacity percentage is 25%, 2 LED lights: 50%, 3 LED lights: 75%, 4 LED lights means battery is fully charged
5. During the charging process, if the 4 LEDs all keep flashing, this is an ERROR

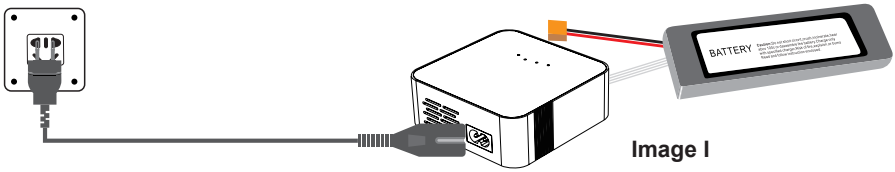

Image I

Attention: Please DO fully charge and correctly assemble the Battery before flight, the balance detector is available to test the battery (Fully charged at 16.7~17V).

4.8 Calibration

Attention: All calibrations SHALL be done based on LOCKING status.

Calibration procedure goes in order:

Throttle(Neutral) Range Calibration ---> Horizontal Calibration ---> Compass Calibration

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a、 Throttle(Neutral) Range Calibration

Throttle Calibration is applied in below cases:

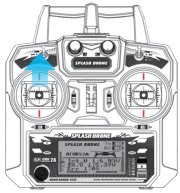
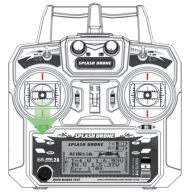
a.Using the Radio Controller at the first time;

b.Side flight occurs when all joysticks are in neutral position;

c.Radio controller drops off against ground by accident.

Tips of Calibrating Throttle(Neutral) Range	LED Indication
1. Switch on Radio controller, then power on aircraft to wait until self-checking finishes. (Motors will emit sound 'beep-beep...' during self-checking, process finished when no any more sound from motors after a long beep sound.)	
2. Push up joystick to fully 100% throttle, and wait few seconds until the Indicator is flashing blue on the Power Distribution Board.	
3. Pull down throttle at Minimum 0% position, wait until indicator blinks blue slowly. Then release the joystick to have regular blinking of twice green -->once blue... cyclically. Then the Throttle Range calibration is done.	

Operation diagram

	
Switch on Radio controller, then power on aircraft, Push up joystick to fully 100% throttle.	Once the Indicator is flashing blue, pull down Throttle to 0% position to wait until indicator blinks blue slowly. Then release the joystick to have regular blinking of twice green > once blue... cyclically.

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b、 Horizontal Calibration

Horizontal Calibration is applied in below cases:

a. Fly Splash Drone the first time;

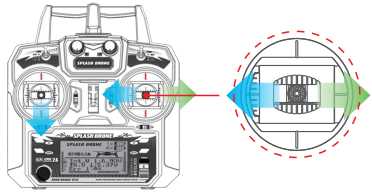
b.Side flight occurs when all joysticks are in neutral position;

c.Aircraft has crashed in last flight;

d.The Indicator on Power Distribution Board is blinking RED slowly.

Tips of Calibrating Throttle(Neutral) Range	LED Indication
1. Place aircraft at the flat horizontal ground;	
2. Power on Radio Controller & aircraft, check and ensure normal communication between Radio transmitter, receiver and Flight controller;	
3. Keep pulling down Throttle at lowest 0% position, then flipping Aileron joystick from left-->right-->left... quickly until indicator flashes GREEN. When LED indication changes into Red -Green-Blue interval blinking normally, finishes calibration.	

Operation diagram

Flipping Aileron joystick from left-->right-->left... Quickly until indicator changes from flashing GREEN into Red -Green-Blue interval blinking normally, calibration is done.	

c、Compass Calibration

The GPS module is built-in magnetic field sensor for measuring the geomagnetic field, which isn't the same in different areas. The GPS module will not work unless the Compass Module has been connected correctly.

Calibrating the compass before the first flight or when flying in a different area. Make sure to keep away from ferromagnetic substances and other electronic equipment when calibrating or flying. If you keep having calibration failures, it might suggest that there is magnetic interference or other ferromagnetic substance, avoid flying in this area.

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⚠ Notice: Please always keep the compass module away from magnets. If this situation occurs please change the compass module before flying, otherwise it may damage the compass module and lead the Splash Drone to work abnormally or even be out of control.

Compass Calibration is applied in below cases:

a.Fly Splash Drone the first time;

b.Take-off location is over 100KM away from last compass calibration;

c.Aircraft has been crashed in last flight;

d.Aircraft is swaying frequently during flight;

e.The Indicator on Power Distribution Board is blinking YELLOW slowly.

Tips of Compass Calibration	LED Indication
1. Switch on Radio controller and then power on aircraft to wait for completion of self-check.(Motors will emit sound 'beep-beep...' during self-checking, process finished when no any more sound from motors after a long beep sound.)	
2. Flipping SWA quickly from SWA1 to SWA3 cyclically to wait until the indicator gets flashing GREEN continuously.	
3.Horizontally pick up aircraft and rotate it in the same direction for 2 circles(720 degree) till the LED blinks green slowly. (Horizontal calibration is needed when RED indicator showed up during rotation.)	
4. Turn aircraft Nose vertically down, rotate it in the same direction for 2 circles(720 degree) till LED indicator resumes normal Blue-Red-Green interval blinking. Place aircraft down to the flat ground, power it off and restart up to check, then compass calibration finishes. (Pls DO ensure rotation is done vertically, otherwise RED indicator will show up to remind of re-calibrating compass process.)	

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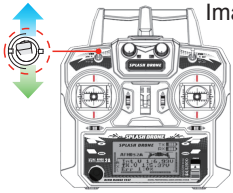
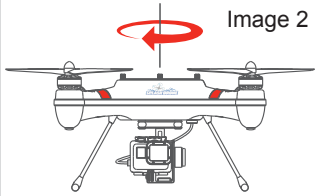
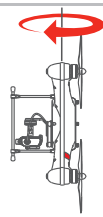
Operation diagram

Image 1	Image 2	Image 3
		
Flipping SWA quickly till the indicator flashes GREEN continuously.	Rotating aircraft 2 circles in a same horizontal plane till LED blinks GREEN slowly.	Turning aircraft Nose down, and vertically rotate 2 circles till LED resumes Blue-Red-Green interval blinking.

4.9 Flight Mode

Introduction spreadsheet

	ATTI Mode	GPS Mode
Radio Input	Linear Control	
Operational function	Keep aircraft horizontally when joysticks stay at Neutral position, the MAX tilting flight angle of 25 degree can be achieved from a fully motion imposed on joystick.	Keep aircraft horizontally when joysticks stay at Neutral position, the MAX tilting flight angle of 25 degree can be achieved from a fully motion imposed on joystick.
Locating	Not Support	Support
Max elevate speed	4m/s	4m/s
AUTO RTH	Support	Support
Flight speed	Unlimited	Unlimited

Flight Mode

Flight Mode	
GPS Mode	Simpler and easier flying experience can be acquired basing on GPS mode (Take-off before the Satellite signal is above 6). Keep throttle joystick in neutral position, then position of aircraft is locked automatically and maintains high-precision hovering. It performs pretty stable hovering even in light wind(4~5 rating). To get more stable flight, please DO ensure a good GPS signal mechanism.

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ATTI Mode	Aircraft sustains flight balance automatically, as well as lock the flying height when throttle joystick stays in neutral position. Pushing up Throttle joystick, the aircraft ascends; pulling down it descends. When losing control on the radio signal, aircraft will enter into Auto Return Home mode automatically to get aircraft back to take-off location.
Fixed speed Cruise Mode	Switch SWA gear to activate the Fixed speed cruise mode. Take the current flying speed as reference, pushing up Aileron joystick to accelerate, pulling down aileron to slowly decelerate speed at 1.5m/s to move froward constantly. Once releasing Aileron joystick, aircraft will cruise to Nose direction by sustaining current speed. Aircraft turns to left when flipping Aileron joystick to left, Aircraft turns to right when Aileron joystick to left.(Yaw isn't effective under Fixed speed Cruise Mode, and aircraft will fly forward at a fixed speed of 1.5m/s when switching from hovering to this specified mode.)
AOC Mode	When aircraft is targeted at the top of specific object , switch SWB to middle position to turn on the AOC function. The aircraft nose always points toward to the TARGET with defaulted flight radius at 10M. Throttle joystick is starring in ascending & descending, pushing Aileron joystick up to decrease radius between aircraft and target, pulling own to increase flight radius, flipping to left to have a clockwise circulation flight surrounding the target, flipping to right to get the counter-clockwise flight. When aircraft is keeping a fixed speed under AOC mode, there will be inertia movements (when flipping Aileron joystick to the same direction as the flying aircraft, it will decelerate to hovering and then accelerate to the opposite direction slowly. Otherwise, aircraft will accelerate. ***Notice: This mode is ONLY effective basing on radius at ABOVE 10M between aircraft and target.***
AUTO Return-To-Home Mode	Switch SWB to lowest SWB3 position to turn on the AUTO RTH mode. Aircraft will automatically return to the top of take-off place (Initial location where motors got unlocked) after hovering 10s under this mode. Bring down aircraft slowly and lock motors accordingly. Notice: Good GPS signal is the premise for a precisely landing-on. If failing to control aircraft with the radio controller during Return-To-Home process, please switch SWB to SWB1 gear. Once quitting the AUTO RTH mode, SWA mode is rightly the current flight mode.

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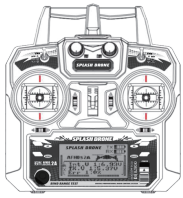
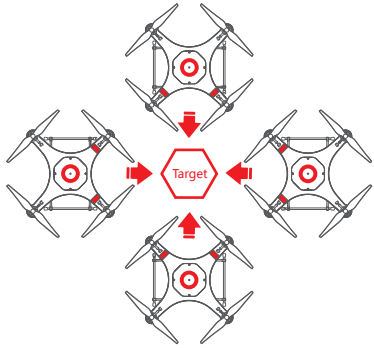
Operation diagram

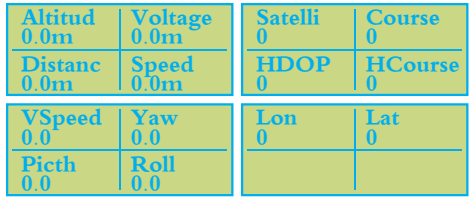
AOC Mode	 

Failsafe Return-To-Home function:

When aircraft is out of effective telemetry rang or radio controller is power off by accident, it will automatically enter into the failsafe Return-To-Home mode. Once regaining the radio signal, aircraft will keep the flight mode that SWA gear stayed. Then it' s available to control it back. (Suggestion: After regaining radio signal, the gear of SWA stays at SWA1, SWB at SWB1.

OSD data in the Radio controller

The telemetry system of Splash Drone is integrated with dual OSD data transmission between flight controller and Receiver, all flight parameters are visible from the display of Radio controller (Automatic Frequency-Hopping Digital System)

OSD data Transmission	
Press 'up' & 'Down' to enter into interface of OSD data. All the flight parameters are visible, such as battery balance, flying speed, Satellite quality, coordinates, etc. ⚠ Attention: Take-off location only can be recorded basing on Satellite signal above 6, so please DO check the OSD data and ensure value is above 6 before flight.	

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Menu introduction

Menu	Interpretation
Altitud	Flying height that contrast against Take-off place (m)
Voltage	At-sight voltage of the main battery (V)
Distanc	Flying distance away from Take-off place (m)
Speed	Flying Speed(m/s)
Satelli	GPS Signal level (0-10)
Course	Flight (Tilting) angle in current Flight mode
HDOP	The horizontal Dilution of Precision on GPS
HCourse	Auto Return to Take-off place
VSpeed	Ascending(+) /Descending(-) speed (m/s),
Yaw	Flight (Rotating) angle of aircraft Nose
Pitch	Flying angle of moving forward(+)/ Backward(-)
Roll	Flying angle of moving to Right(+)/ Left(-)
Lon	Longitude
Lat	Latitude

5、Flight Instruction

5.1 Operation Announcement before flight

Safety Guide

DO NOT operate in following situations:

1. Please comply with local policy to eradicate any flights in the No-Fly Zone;
2. Flight nearby strong interference on radio signal is prohibited;
3. Flight among/ near to the crowed/ residences is prohibited;
4. Operations in heavy rain & storm pouring & poor flight vision are prohibited;
5. Operations nearby High-Voltage transmission line & Broadcast signal interference is prohibited;
6. In case of losing control, please DO NOT operate near to strong magnetic filed;
7. DO NOT operate when you are tired, not feeling well or under the influence of alcohol or drugs.
8. DO NOT operate aircraft when the radio controller is malfunction.

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⚠ Check and ensure every parts are completely in good shape before every flight.
⚠ Check Motors & Propellers to make sure correct installation with high reliability before flight. Please DO NOT be near to the running motors & propellers to avoid unexpected Injuries(Damages).
⚠ Please keep the Compass module away from magnetic filed, otherwise it will ruin the compass module and leads to malfunction on aircraft.
⚠ Please keep flight distance above 3M away from pilot & the crowed & power supplying cables.
⃠ DO NOT overloading any objects that is heavier than 1KG;
⚠ Please make sure the main battery and radio are fully changed before flight;
⃠ Avoid operating radio controller and other wireless appliances simultaneously. Vehicle equipment & power resource may influence the 2.4G telemetry system.
⚠ Firstly switch-on radio, then power-on aircraft before Taking-off, Firstly power-off aircraft and then switch-off radio after Landing-on.
⚠ Please ALWAYS use the original 12 Inch self-tighten carbon-fiber Propeller.
⚠ Please place aircraft away from the speaker devices in vehicle.
⚠ Please turn off WIFI function before loading sport camera onto aircraft, any obedience will influence the transmitter and leads to malfunction in aircraft.
⚠ Please operate in the open air under GPS & ATTI Mode. Notice: Please pay attention to the GPS Indicator during flight, aircraft will enter into ATTI mode automatically in 3s after losing GPS signal (Indicator blinks RED 2 or 3 times).
⚠ Please land off aircraft ASAP when the low-battery warning is alarming. Switching flight mode into ATTI is advisable to get all under control.
⚠ Failsafe Return-To-Home: It will be activated once aircraft loses signal control from radio transmitter under stable GPS circumstances, aircraft will return to take-off location automatically.
⚠ Please note: 4 Navigation LEDs are blinking RED is indicating low battery balance.
⚠ Please check & ensure the 4pcs navigation indicators that enclosed inside of each axis are working well before flight.

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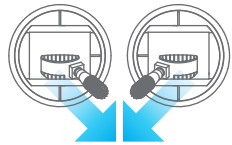
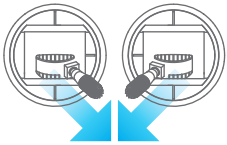
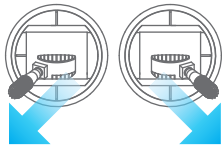
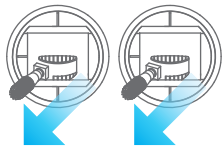
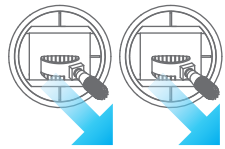
5.2 Launch with Splash Drone

Start and Launch the Splash Drone
⚠ Please always taking flights in the open air, and DO keep aircraft above 3M away from pilot & the crowed.
⚠ Checking & Resuming all the gears to their defaulted locations before switching on the radio controller.
⚠ Please make sure every parts are in good situation before powering on aircraft.
⚠ Please DO NOT move & touch aircraft once connecting with battery, the system enters into self-checking automatically.
⚠ Please ensure good GPS performance before taking-off. (Satellite value from Radio controller is above 6.)
Pulling the 2 joysticks to their lowest location in opposite direction. For instance, keep the Throttle joystick at the Right(Left) lowest corner as well as the Aileron joystick at Left(Right) lowest corner to unlock motors. 
⚠ Aircraft is ready for flight when the LED indicator woks normally(refer to details for LED indications)

unlock motors

			
unlock motors 1	unlock motors 2	unlock motors 3	unlock motors 4

5.3 Landing-off

Landing-off the Splash Drone
1、Slowly pulling Throttle joystick to its lowest location, till aircraft land-off evenly on the flat ground.
2、Keep throttle at 0% position until motors stop rotating.
3、Firstly power off aircraft, and then switch off radio controller.

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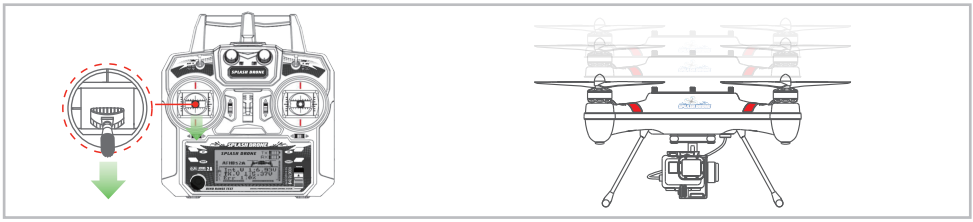
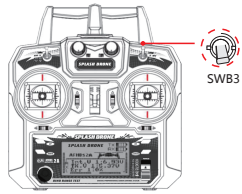
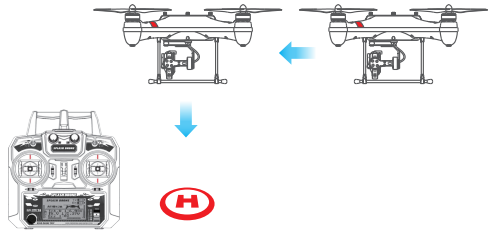
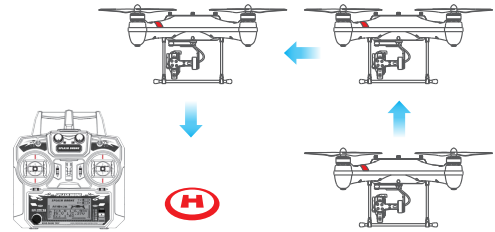
Operation diagram



5.4 Automatic Return-To-Home

Automatic Return-To-Home	
When SWB is staying at SWB3 gear, aircraft will return to its take-off location automatically based on good GPS communication.	

Principles in Automatic Return-To-Home	
Flying height >20m Distance away from take-off location >15m (Aircraft will keep the original height to execute the Automatic Return-To-Home.)	
Flying vertical height <20m Distance away from take-off location >15m (Aircraft will elevate flight height to 20m, and then execute the Automatic Return-To-Home.)	

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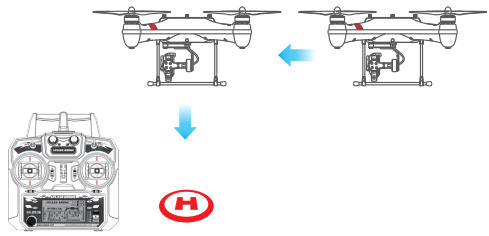
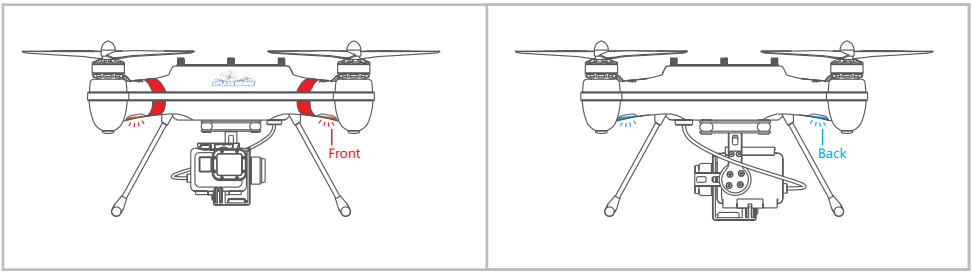
Flying vertical height <10m Distance away from take-off location <15m (Aircraft will keep the original height to execute the Automatic Return-To-Home.)	

⚠ **Warning: If landing-off location isn' t the expected suitable place, please firstly switch SWB3 to 'OFF' gear or quit the GPS mode, then bring up aircraft to the acceptable height to execute landing-off properly.**

5.5 Navigation Indicators

Powering on the Splash Drone, the 4pcs navigation LEDs will indicate the current location.

Front 2 LEDs (The side with 'Splash Drone' sticker) are used to indicate the aircraft Nose direction in solid RED color, rear is indicating solid GREEN. Front 2 LEDs (The side with 'Splash Drone' sticker) are used to indicate the aircraft Nose direction in solid RED color, rear is indicating solid GREEN.



⚠ **Notice: Once the battery voltage is lower than 14.4V, all the 4 pcs Navigation LEDs will blinking at the same time.**

5.6 LED Indication for flight controller

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Green Indicator: Stands for Working Status

Blue Indicator: System Status

Red Indicator: GPS signal quality and lower-battery warning

Attention: The horizontal calibration is required when the LED on the power distribution board blinks Yellow slowly. Normally, one whole circulation for the LED indication is Green-->Blue--> Red.

LED Indications (Un-locking)		
Working Status		
None-Blink		At-sight mode when SWB is off
Blinking once		ATTI Mode
Blinking twice		GPS Mode
Blinking thrice		AOC Circulating Mode
Flashing		RTH Mode
Blinking slowly		Vertical Compass-Calibrate
Flashing		Horizontal Compass Calibrate
System Status		
Blinking once		Throttle joystick isn't staying at neutral position
Blinking twice		Throttle or Aileron joystick is n't staying at neutral position
GPS signal & lower-battery warning		
None-Blink		Perfect GPS signal (Satellite >8)
Blinking once		Excellent GPS signal (Satellite =8)
Blinking twice		Good GPS signal (Satellite =7)
Blinking thrice		Normal GPS signal (Satellite =6)
Blinking quintic		No GPS signal (Or Satellite <5)
Blinking slowly		Low battery warning(First-level)
Flashing		Low battery warning(Second-level)
Blinking slowly		Need to Calibrate compass
Blinking slowly		Need to do Horizontal Calibration

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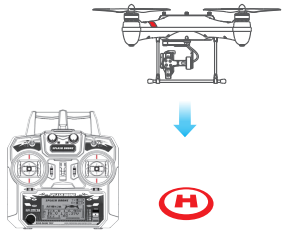
5.7 Low-battery warning & Low-battery AUTO Return-To-Home

	Low-battery warning	LED Indication
First Level	Pre-schemed low-battery warning to remind pilot of returning. LED will flash red once detected current voltage is lower than First low-battery warning. It's better to control the flight back to land-off safely.	
Second Level	Aircraft is forced to land-off when the voltage is lower than second low-battery warning. If landing-off location isn't the expected suitable place, please switch SWA to ATTI mode (middle gear) to bring aircraft to acceptable location to execute landing-off properly.	

⚠ **Warning: If current voltage is lower than the Second warning level, the remaining balance may not enough to sustain returning to the location where is 50m away from take-off place. Therefore, it' s advisable to bring back aircraft to the area range within 50m before balance is approaching to the second warning level.**

Operation diagram

AUTO land-off under low battery	
Distress Landing vertically	

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5.8 Specifications of Splash Drone

Aircraft & Battery & Radio Controller		
Splash Drone	Empty weight(PRO)	1750g
	Hovering precision	± 0.2 m
	Max Yaw Angular Velocity	30°
	Max pitch Tilting Angle	30°
	Max Ascending/descending Velocity	2 m/s
	Max flying speed	GPS & ATTI 6m/s
	Axis Diameter	450mm
	Flight Time	19 mins (4500mAH)
	Max Take-off Weight	2.5Kg
	Temperature	10C°~ 50C°
Battery	Battery	14.8V 4S 3200~5200mAH Lipo
	Capacity	14.8V 4500mAH
	Charging Temperature	0C°to 40C°
2.4GHz Radio controller	Net Weight	390g
	Operation Frequency	2405 ~ 2475HMZ
	Radio Range	1.0 KM
	Receiver sensitivity (1%PER)	-105dbm
	Working current	120 mA
	battery	1.5V AA*4
	Channel	141 channels

6. FAQ

6.1 How about the Radio range performance with Splash Drone customized remoter?

A: Practical test indicates the Max controlling range is up to 1.2KM, the effective distance of signal transmission is depending on actual flight environment.

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6.2 Is there any way to handle when Splash Drone is out of visible area?

A: Yes, the One-key Return-To-Home function is available to bring your Splash Drone back to take-off location automatically. (Please ensure no obstacles & haunts during returning, regain control on the aircraft once coming into visible sight.)

6.3 Is it truly full waterproof Drone with the naked motors?

A: A deep trust is here with us! The motors are specially treated with watertight structure design, particularly for its wiring enrollment and perfect waterproof shell. Whatever, how amazing when flying your Splash Drone on the sea to photograph the whale & dolphins! After enjoying sailing(salty waters), please DO remember to wash Splash Motors with freshwater to avoid corrosion/damages by the salts/sands.

6.4 You wanna a longer flight with the Splash Drone?

A: Usually, the flight time depends on different loading & flying circumstances,
Splash Drone is available for a long flight up to 19mins with empty loading and fully-charged 4500mAH Battery.

6.5 What if prefer to get the Right Throttle mode?

A: Pls don't worry, although the radio controller is defaulted as Left Throttle when ex-factory, customized modification of Right Throttle is also available based on special request. Splash Drone is here to satisfy your different operation habits.

6.6 How can i have the Follow-me function with Splash Drone?

A: Splash Drone is born to be a smart waterproof drone to accommodate with diversity needs for different people, so it's divided into 3 package versions: RTF, PRO and AUTO. Only the AUTO version supports the Follow-me mode, however the RTF & PRO is also very hot for those drone enthusiasts, professional Aerial photography and extreme sports surfing, skating, etc.

6.7 Is it normal when pulling throttle down to the lowest position, but the motors don't stop immediately after landing off?

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A: Taking the unexpected damages into consideration, the motor will stop and lock automatically in 5s after landing off. This protective method Not only decreases the spoilage possibility on the motor, but also ensure a evenly landing off to avoid other in-necessity damages to shell, Propellers, landing gear, etc.

6.8 Is it possible to switch WIFI while aerial photography with Splash Drone?

A: No, it's advised to keep the WIFI off to avoid signal interference.

6.9 What's happening when push Throttle joystick but without any response?

A: In case of extra danger occurs before flight, the radio controller need to be unlocked manually to have control access, then motors can be activated by pushing up throttle.

6.10 Any counteractions to deal with difficulties in taking-off & tilting troubles?

A: 1. Improper installation with Propeller, please check whether the rotating direction of Propeller is in accordance with motors;

2. Gyro variance error leads malfunction with Splash Drone. Please connect with software assistant to calibrate the Gyro.

3. Please do the Horizontal calibration once again before flight.

6.11 What's wrong with wandering/red LED blinking slowly during flight?

A: Compass variance error, need to do Compass calibration at the flat ground, and try to get rid of power cable, magnetic filed interference.

6.12 Why the drone is out of control by accident during flight?

A: The compass magnetization issue or forget calibration before taking-off, pls re-calibrate the Compass or replace a new compass module.

6.13 What need to be done if the drone is dropping height suddenly and flashing red?

A: The low-battery warning is activated, please descend and land off aircraft properly and quickly to have another battery replacement.

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6.14 What’ s the specified channel assigned for the waterproof Pay-load releaser?

A: The defaulted channel for pay-load releasing mechanism is CH7/CH8 in Receiver, this utility can be realized by knob switch VRA/VRB to carry & release lifesaver, swim ring, mini radio appliances to support emergency or even a bottle of water.

6.15 How to adjust the Waterproof Gimbal when it’ s not in horizontal location?

A: Need to calibrate the Gimbal, detailed procedure please refer to <Operational Instruction of Waterproof Gimbal>

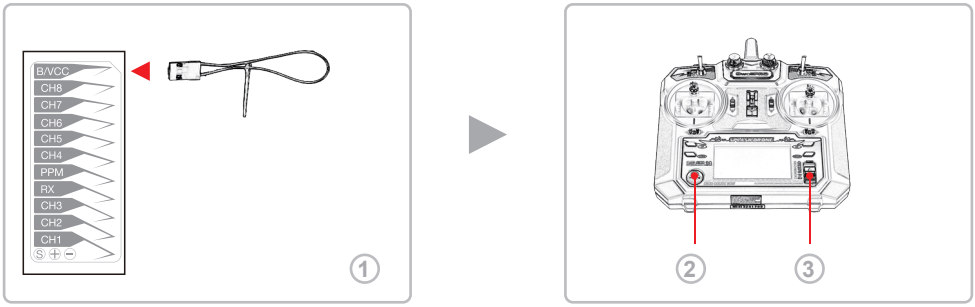
6.16 Why the drone is trembling or not hovering under GPS mode?

A: Aircraft keeps trembling, the system reminds to do the compass calibration;
Throttle range calibration is needed when aircraft isn’t hovering in GPS mode.

6.17 What should be done after getting a new Splash Controller replacement?

A: Yes, there is a binding procedure to code the new Controller with Receiver:

1. Insert the Short-circuit terminal into the ‘B/VCC’ channel in the Receiver;
2. Power on the drone, then Indicator in the receiver is flashing quickly;
3. Long press the black coding button on the left-lower corner of controller, at the same time switch on the controller, then there will be a solid Red indicator in the Receiver to witness the successful binding;
4. Power off the drone, and plug out the Short-circuit terminal to unlock the radio.



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6.18 Any emergency methods to avoid burnt & damage when drone was hunted by the tree, thread or crash unexpectedly?

A: Please immediately lock the Radio controller, then the motor stops working,that can protect the motor/ESC/Props from burnt damage.

6.19 How to regain control once losing contact in the air under GPS mode?

A: Please immediately turn off the Radio controller, and flip all the switches back to original status: 'SWA' stays at 'SWA1', 'SWB' stays at 'OFF', don't touch joysticks. Turn on the Radio controller once again, then the controll signal can be taken over once again. After that, please manually get the drone clam & control it to return safely.

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